FloodRISE
Resilient Infrastructure & Sustainable Environments

Flood Mapping In Los Laureles

Current Progress and Next Steps

Agenda

1) Brief Introduction to the FloodRISE project
2) Current UCI Model in Los Laureles
3) Coupling SDSU's Hydrologic Modeling with our Inundation Mapping
4) Recent Results
5) Future steps

FloodRISE Project Overview

- Overarching goal is to enhance flood risk planning and policies through street level inundation mapping

- Specific Research Goals Include:
  - Understanding effective means of communicating flood risk
  - Reporting flood risk information stakeholders find most useful on maps
  - Understanding what is necessary for flood maps to influence decision making

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Los Laureles Flood Model

- Flood mapping in Los Laureles is accomplished using a 2D Hydraulic model

- The model predicts flood velocities and water depths in the x and y direction

- Modeling results can be processed to map
    1. Flood Depth
    2. Flood Hazard (depth multiplied by velocity)
    3. Probability of Flooding
    4. Duration of Flooding

Flood Model Data Needs

- Floodplain Topography
- Geometry of Important Infrastructure
- Flood Discharges!

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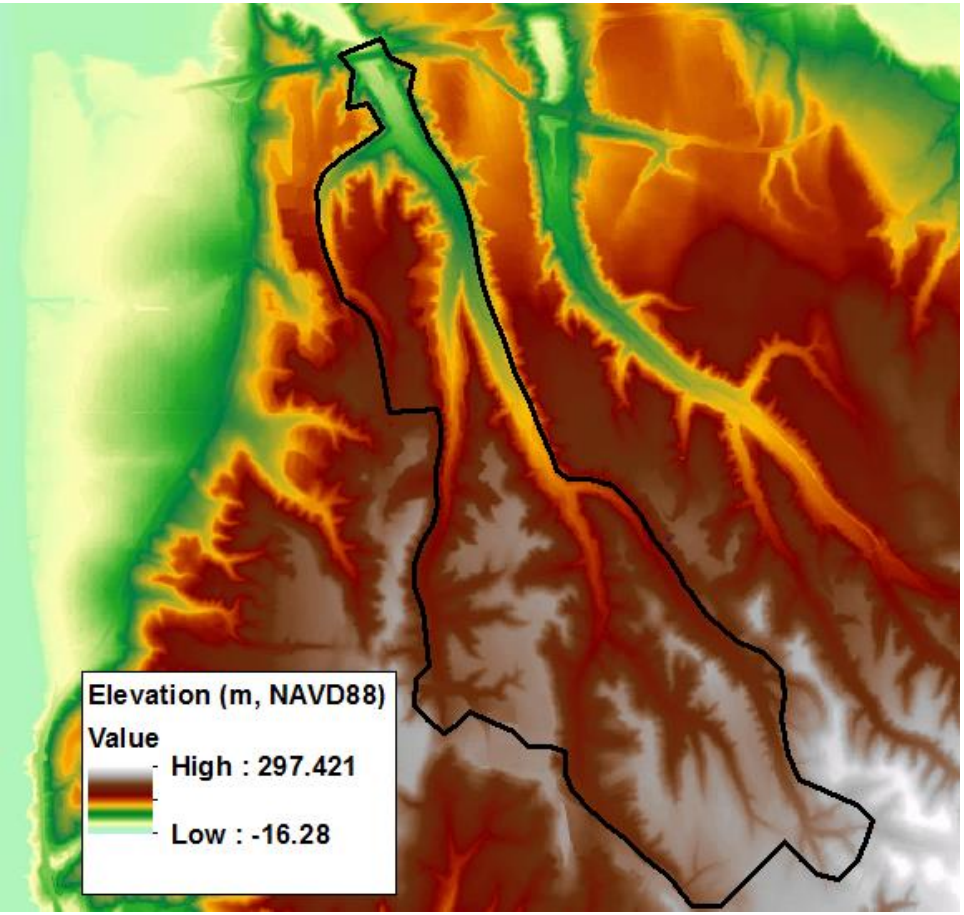
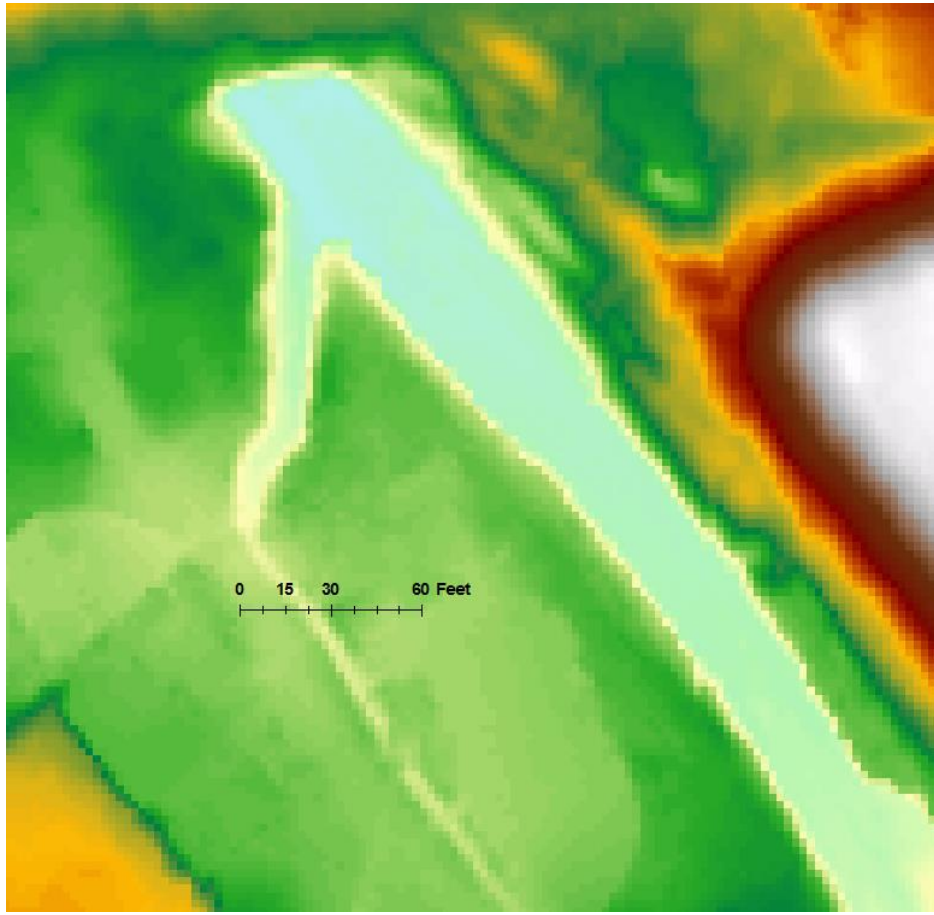
Floodplain Topography





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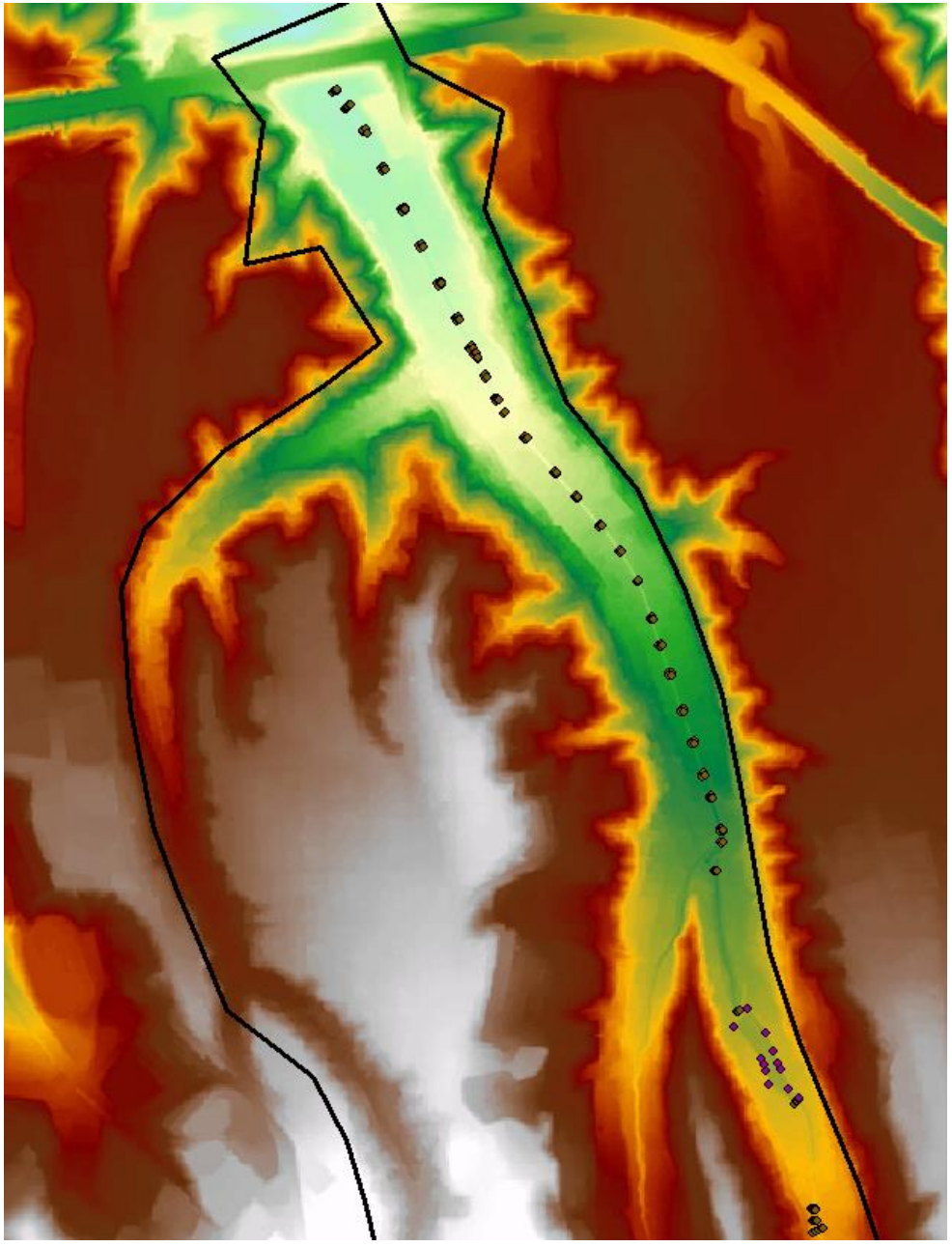
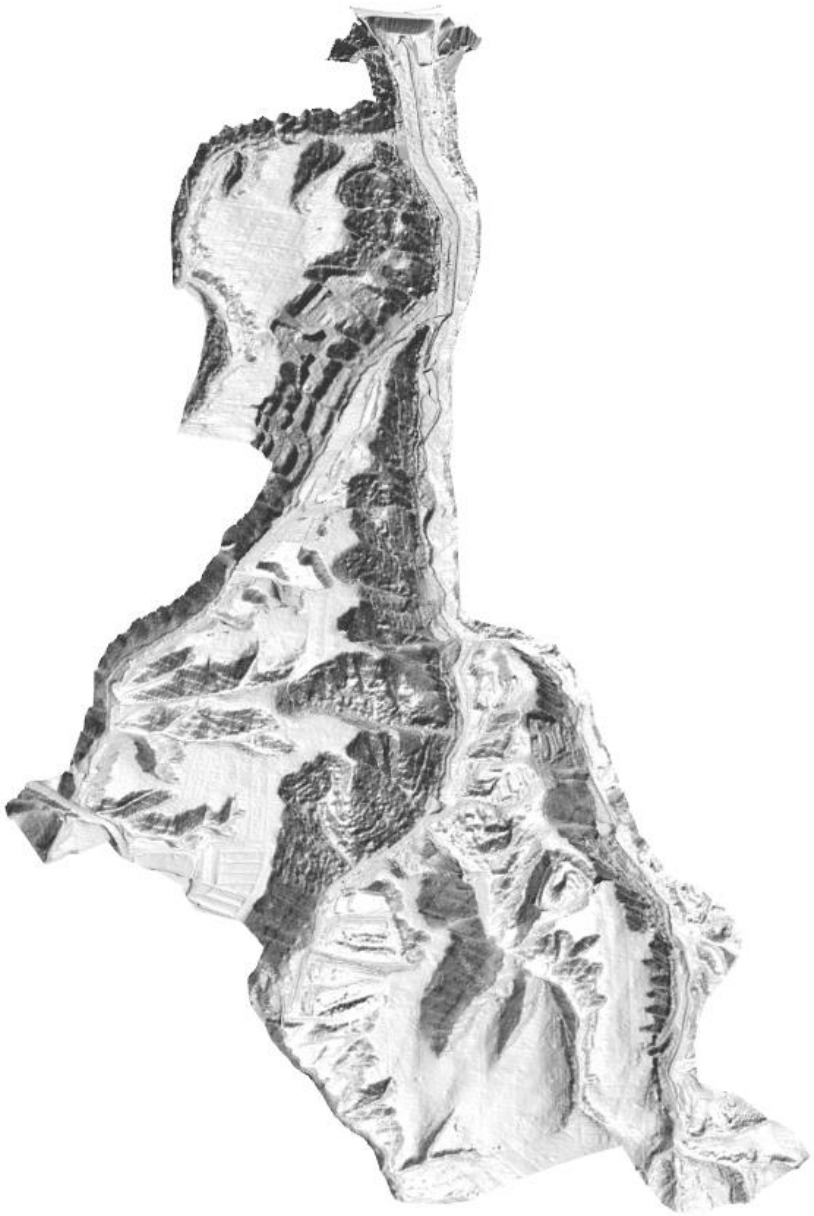
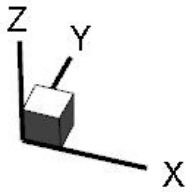
Geometry of Infrastructure



DEM + Geometric Measurements = 2D Mesh





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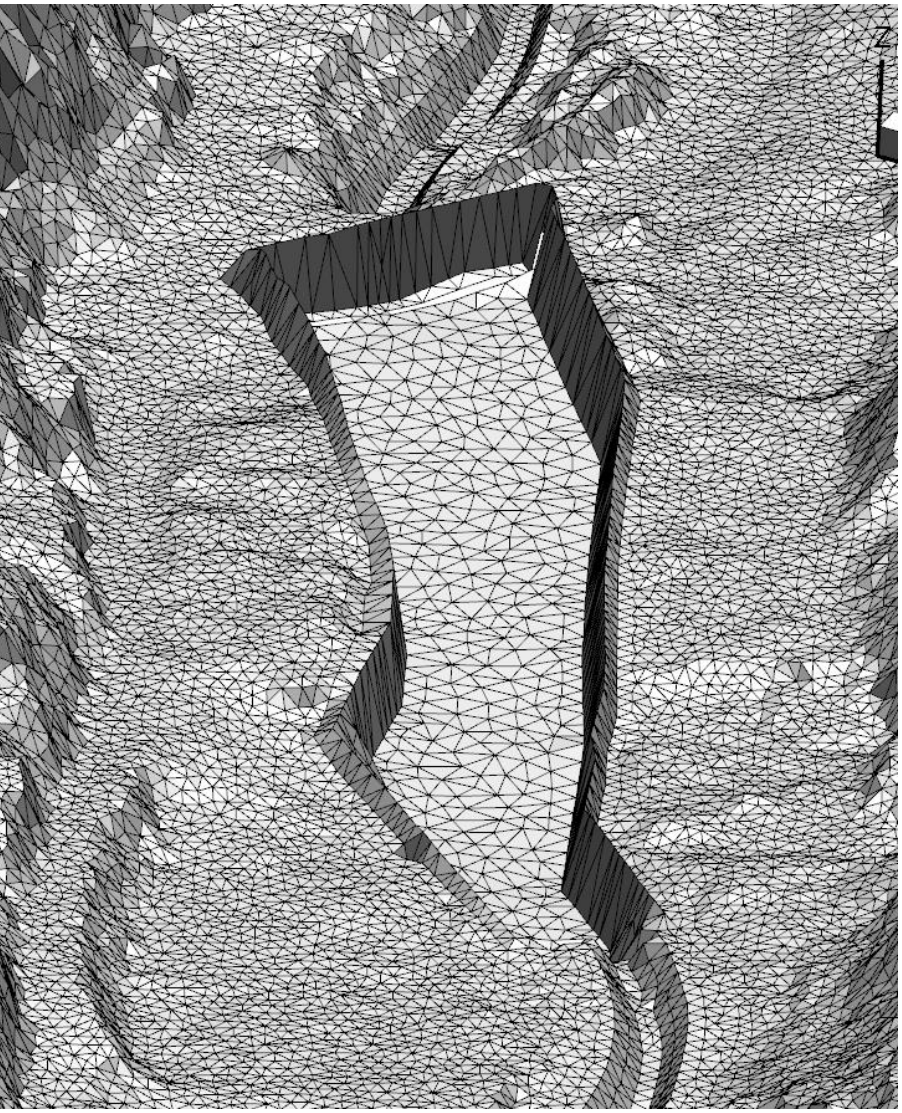
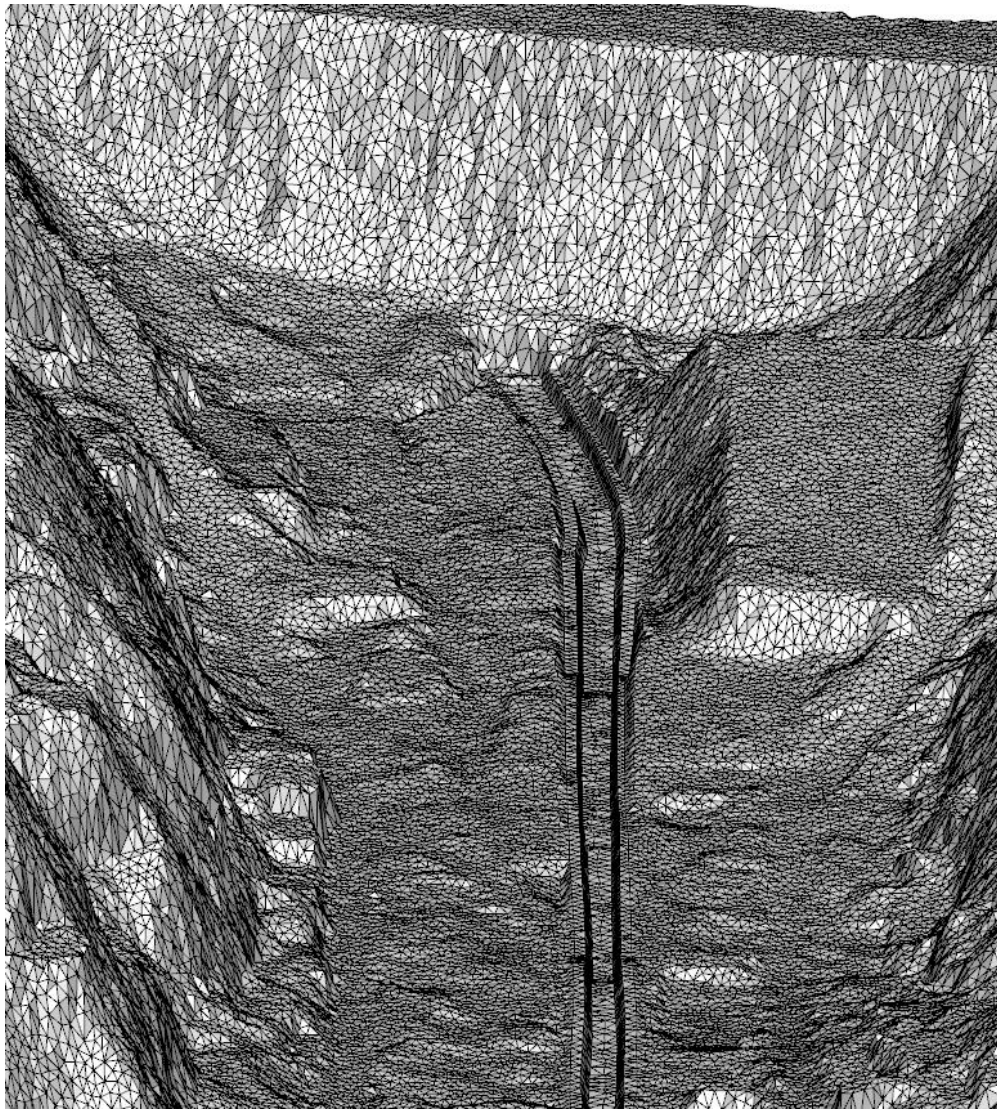
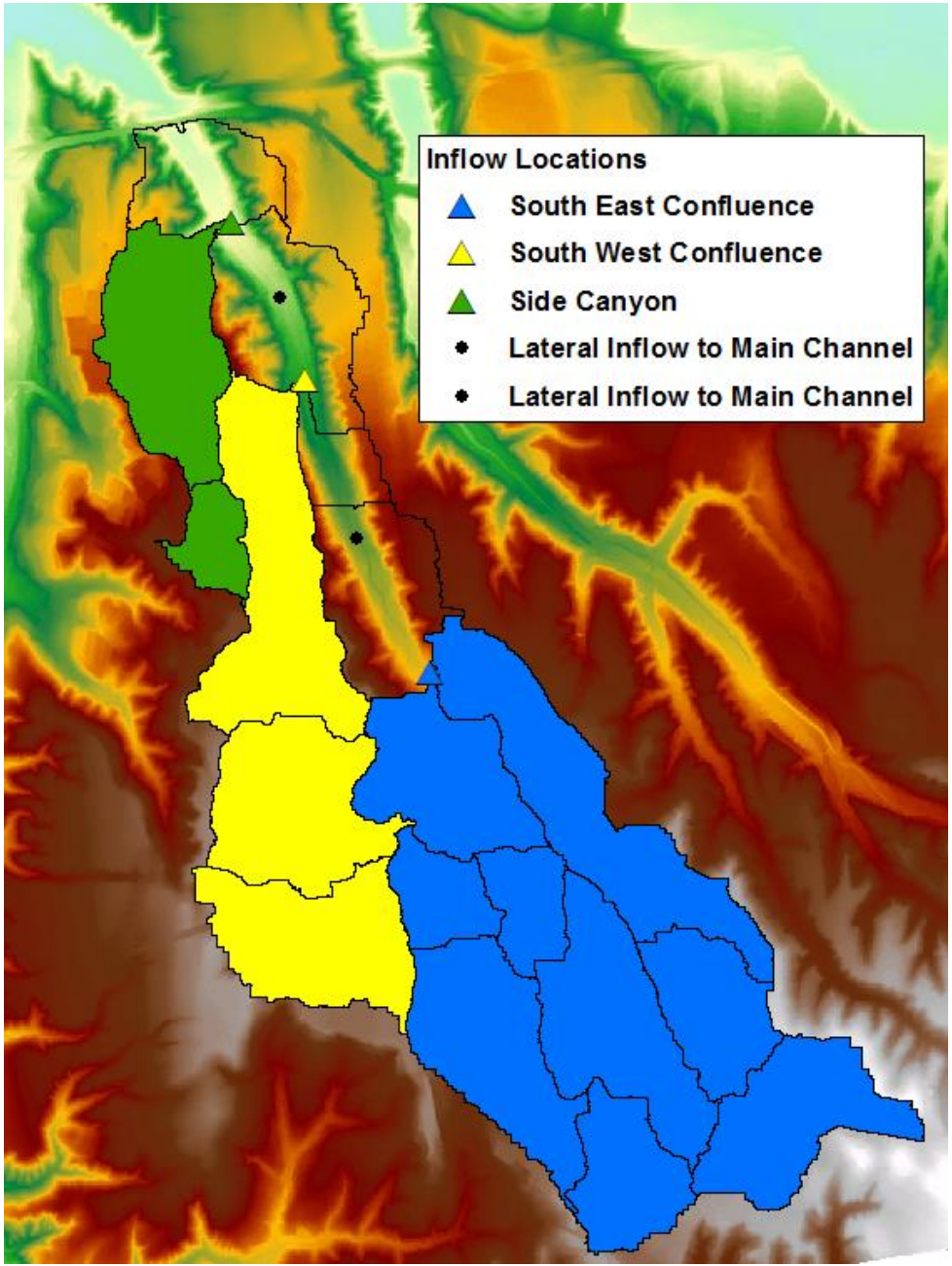




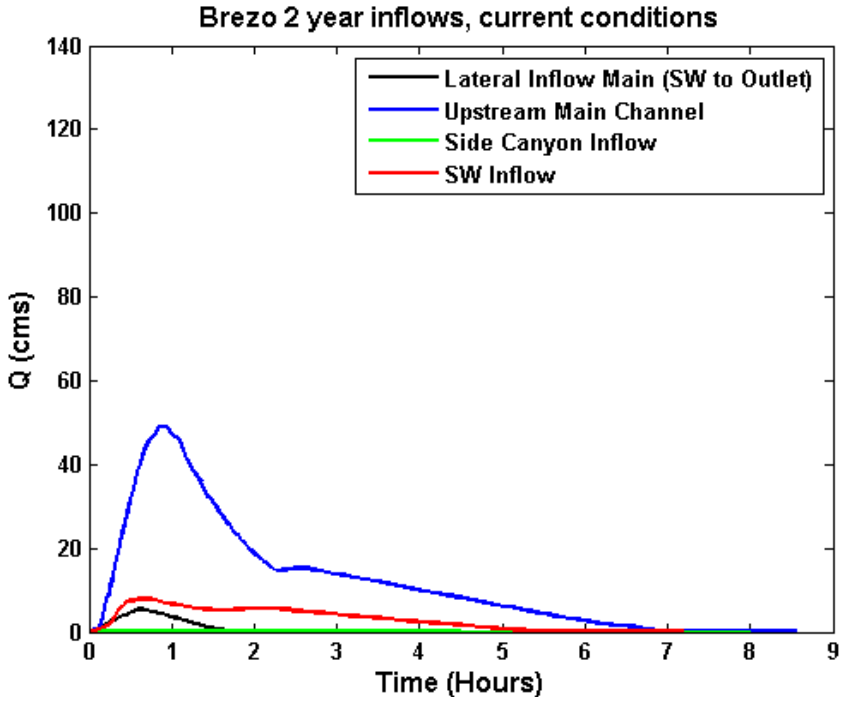
Flood Discharges

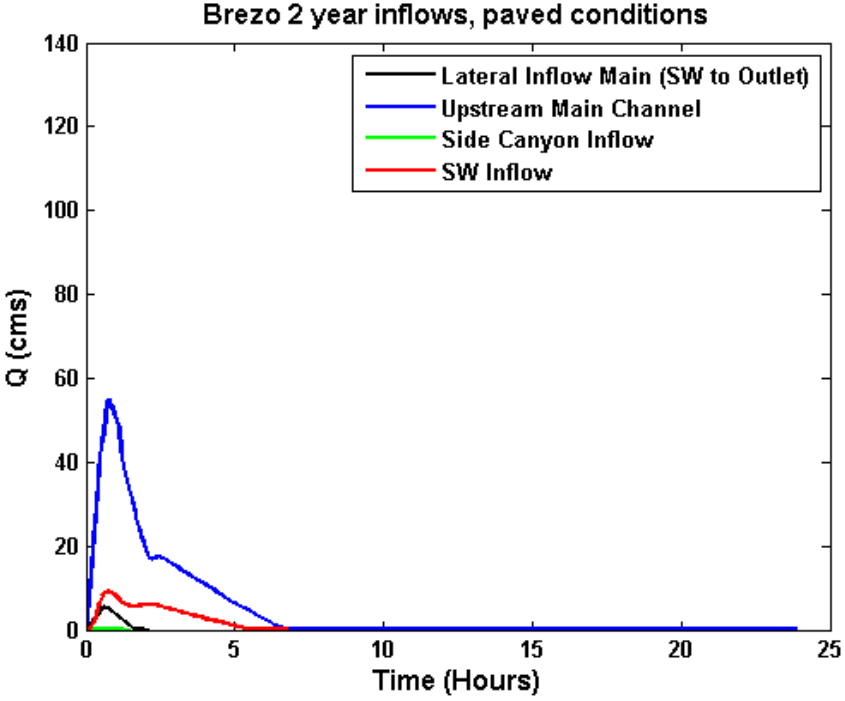
- Los Laureles (Goat Canyon) is an un-gaged basin, so we must used a hydrologic model to characterize the floodplain flows
- The outflow hydrograph's from SDSU modeling serve as inflows to the 2D Hydraulic Model

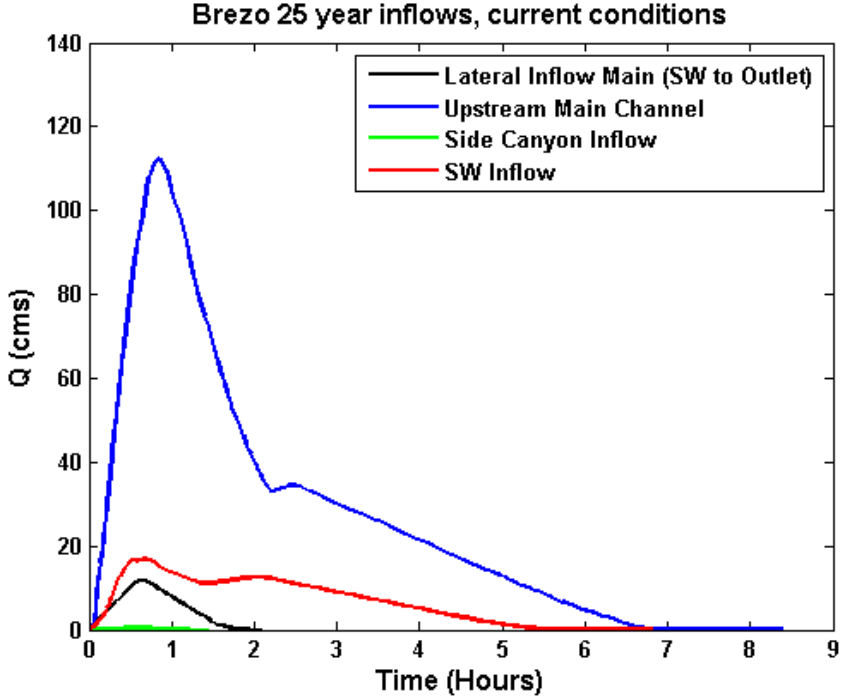
Flood Discharges

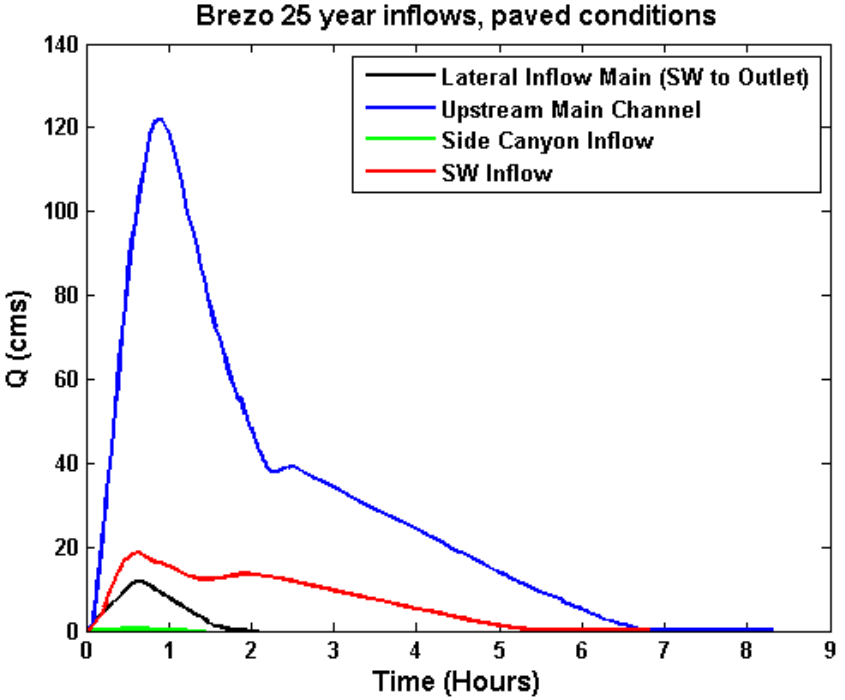


- Hydrographs from SDSU modeling are input to the 2D model at shown locations
- Inundation is mapped downstream of the colored subwatesheds


Brezo 2 year inflows, current conditions
Lateral Inflow Main (SW to Outlet)
Upstream Main Channel
Side Canyon Inflow
SW Inflow
Q (cms)
Time (Hours)


Brezo 2 year inflows, paved conditions
Lateral Inflow Main (SW to Outlet)
Upstream Main Channel
Side Canyon Inflow
SW Inflow
Q (cms)
Time (Hours)


Brezo 25 year inflows, current conditions
Lateral Inflow Main (SW to Outlet)
Upstream Main Channel
Side Canyon Inflow
SW Inflow
Q (cms)
Time (Hours)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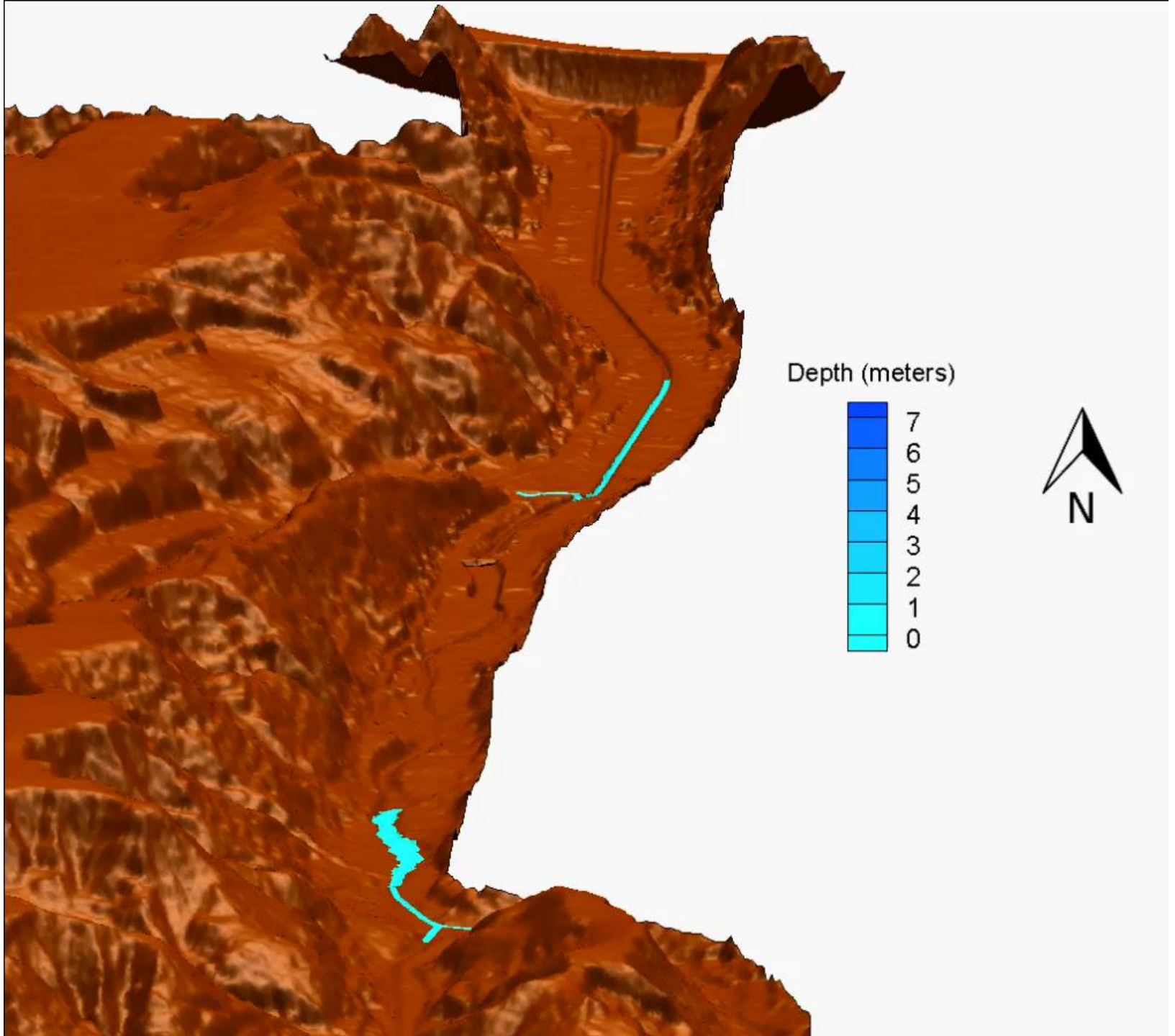
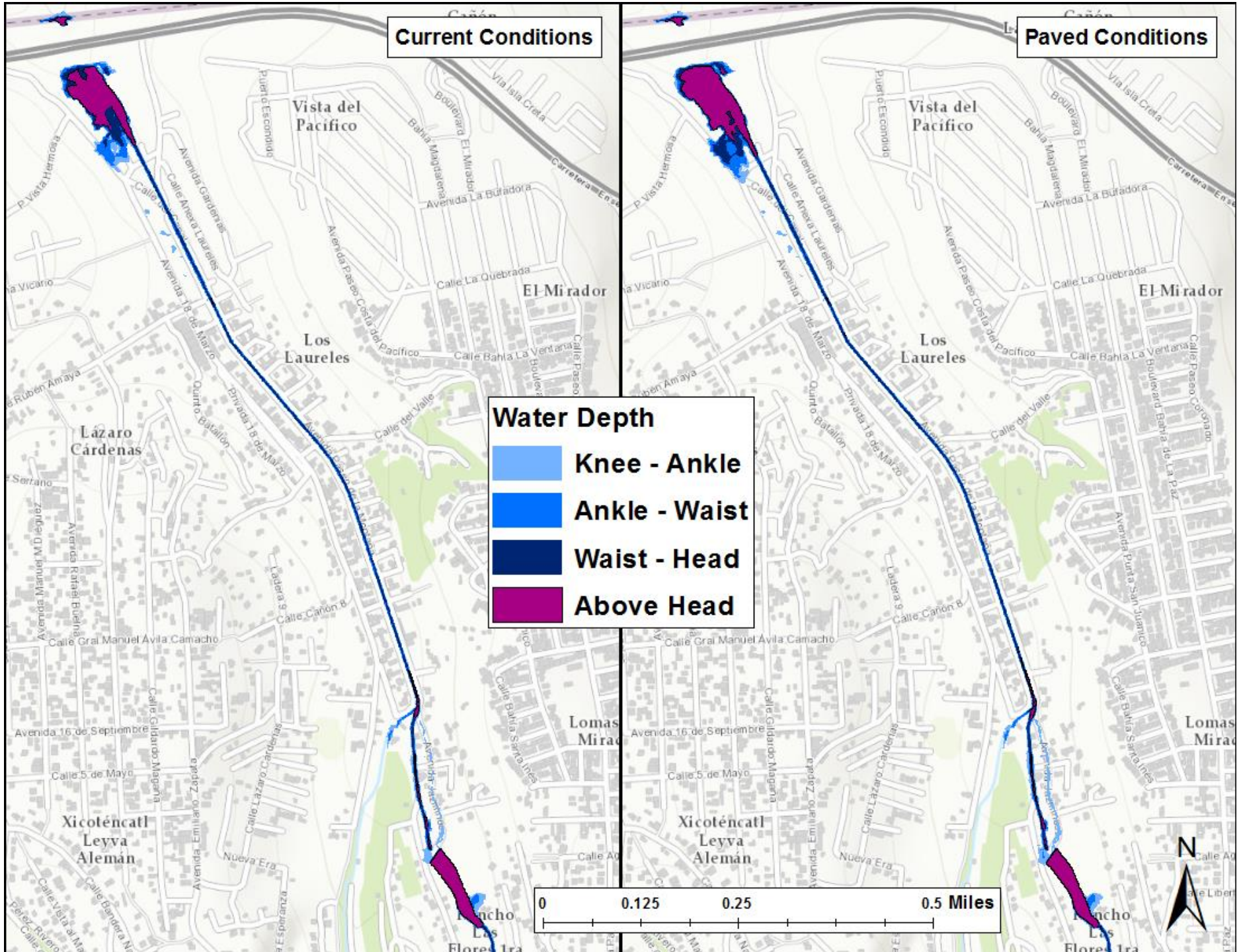
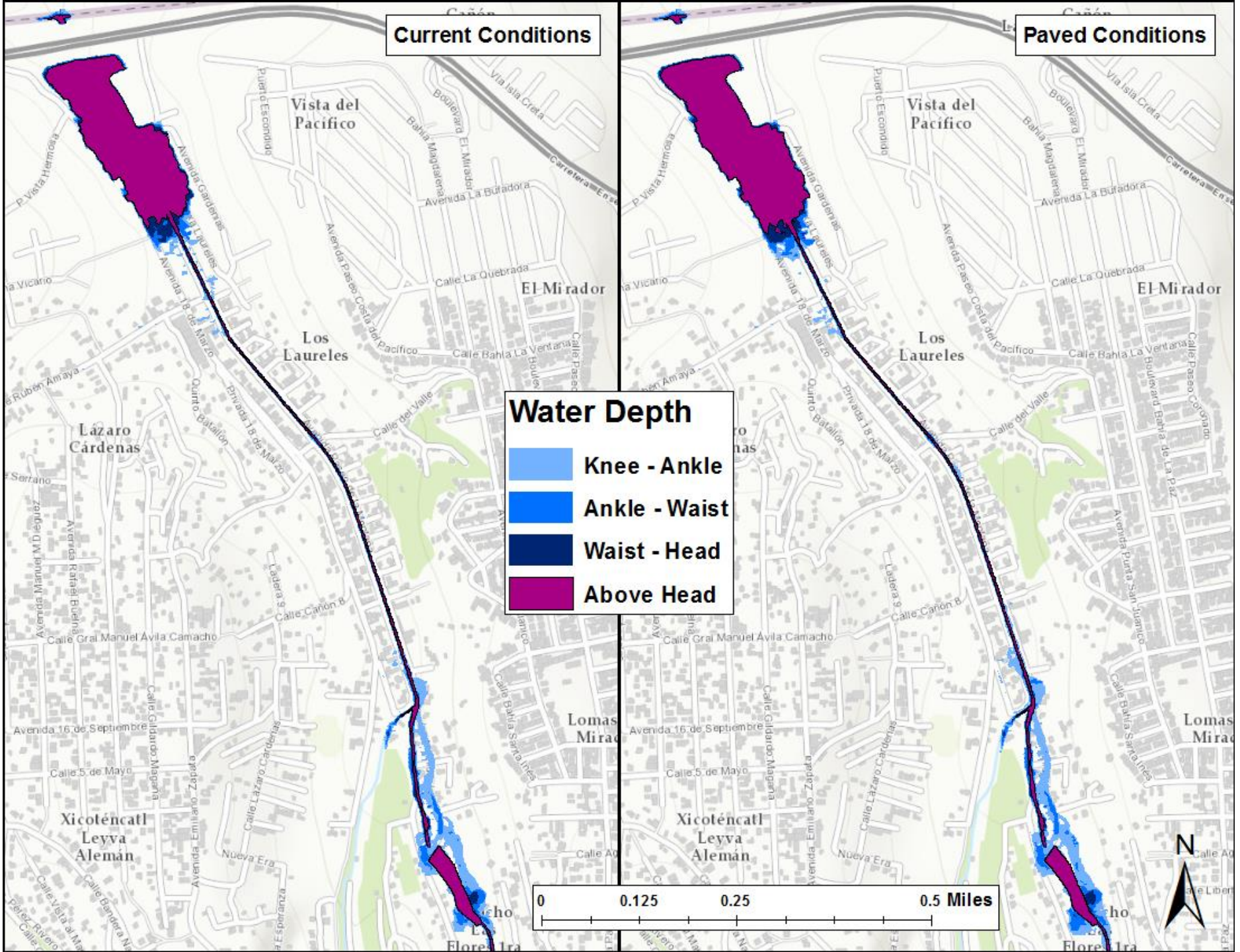

Depth (meters)
7
6
5
4
3
2
1
0
N


Current Conditions
Paved Conditions
Water Depth
Knee - Ankle
Ankle - Waist
Waist - Head
Above Head
0
0.125
0.25
0.5 Miles
N
Vista del Pacífico
El Mirador
Los Laureles
Lázaro Cárdenas
Xicoténcatl Leyva Alemán
Avenida 18 de Marzo
Calle La Quebrada
Calle Bahía La Ventana
Avenida Paseo Costa del Pacífico
Calle del Valle
Calle Cañón B
Calle Gral Manuel Ávila Camacho
Avenida 16 de Septiembre
Calle 5 de Mayo
Nueva Era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Vista del Pacífico
Los Laureles
El Mirador
Lázaro Cárdenas
Xicoténcatl
Leyva Alemán
Lomas Mirad
Avenida Gardenias
Avenida 18 de Marzo
Avenida Paseo Costa del Pacífico
Calle La Quebrada
Calle Bahía La Ventana
Calle del Valle
Quinto Batallón
Privada 18 de Marzo
Calle Cañón 8
Calle Gral Manuel Ávila Camacho
Avenida 16 de Septiembre
Calle 5 de Mayo
Calle Lázaro Cárdenas
Nueva Era
Avenida Punta San Jumico
Calle Bahía Santa Inés
Boulevard Bahía de La Paz
Avenida La Bufadora
Bahía Magdalena
Boulevard El Mirador
Puerto Escondido
Vía Isla Creta
Carretera Ens
P. Vista Hermosa
Avenida Rafael Buelna
Avenida Manuel M. Dieguez
Avenida Emiliano Zapata
Calle Gildardo Magaña
Calle Bandera Nacional
Calle Vista al Mar
Calle Pérez Rivero
Calle Libertad

Special thanks to

UCI Sustainability Initiative

SAN DIEGO STATE UNIVERSITY